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Recognition Award Submission



State of California
Office of the State CIO

Digital Government: Government to Citizen

Executive Summary

California State Parks has developed the “Parks Online Resources for Teachers and Students” (PORTS) program as part of its ongoing effort to inspire and educate students about the natural and cultural resources contained within its 278 park units. The PORTS program is a highly collaborative effort between public schools and California State Parks, and uses California's new K-12 High-Speed Network (HSN) to deliver live, interactive video-conference presentations to classrooms from parks throughout the state.

California State Parks offers many opportunities for students to learn about California's natural and cultural history through hands-on experiences and interaction with trained staff and volunteers. Field trips to California's state parks have been a favorite educational experience for generations of school children. Unfortunately, as our State has grown in population, an increasing percentage of students are unable to participate in a traditional visit to a State Park.

More and more students are living in urban areas where distance or economic and social barriers prevent them from experiencing the natural and cultural resources contained within the California State Park system. Budget, staffing and risk/liability issues can also make it difficult for schools throughout the state to visit parks. When a real field trip is not a feasible alternative, PORTS allows park rangers and interpreters to look directly into the eyes of children and engage them in conversation as the students sit in their classrooms and study science, history, language arts and other academic content standards. The PORTS program provides students with access to park experts regardless of their geographic location or economic status.

Innovative communications technologies abound in the PORTS program. They include: IP-based video conferencing, IP Quality-of-Service, IP-Underwater, streaming media, green screen/chroma-key systems, 900 Mhz wireless, Wi-Fi, private DSL, wireless Mesh Networks, and even a fly-away satellite unit.

PORTS programs enhance existing curriculum and provides students with direct access to the knowledge, expertise, and enthusiasm of State Park employees. The PORTS program also offers teachers and students a pleasant break from normal classroom routine, and thereby creates an important new opportunity for students to become excited and challenged within their normal course of study. Finally, there are many anecdotal stories nationwide of how a compelling video-conferencing field trip experience can still achieve many of the same life-changing benefits that result from the same kind of experience during a physical field trip.

The return on investment of the PORTS program is and will be enormous. During the 2005/2006 school year, the PORTS program served approximately fifteen thousand students (15,000) in five hundred (500) classrooms throughout the state. In comparison, in FY 2000-2001 California State Parks served approximately 20,000 school groups at our park units. Since California has over 286,000 classrooms in the state, there are clearly many additional school classrooms in California not currently being served by physical field trips that will be able to benefit from the PORTS program.

A. Concise description of the business problem and solution, including length of time in operation

California State Parks offer many opportunities for students to learn about California's natural and cultural history through hands-on experiences and interaction with trained staff and volunteers. As a result, field trips to California's state parks have always been a favorite educational experience for generations of school children. Unfortunately, as our State has grown in population, an increasing percentage of students are unable to participate in a traditional visit to a State Park.

However, more and more students are living in urban areas where distance or economic and social barriers prevent them from experiencing the natural and cultural resources contained within our State Park system. Budget, staffing and risk/liability issues can also make it difficult for schools throughout the state to visit parks. As a result, California State Parks in 2003 began to develop the "Parks Online Resources for Teachers and Students" (PORTS) program as part of its ongoing effort to inspire and educate students about the natural and cultural resources contained within its 278 park units. (See: <http://www.ports.parks.ca.gov/>). After several years of program development and testing, PORTS began production at four locations during the current 2005-2006 school year.

PORTS is a highly collaborative effort between public schools and California State Parks. PORTS uses California's new K-12 High-Speed Network (HSN) (See: <http://www.k12hsn.org/>) to deliver live, interactive videoconference presentations to classrooms from parks throughout the state. (HSN is the new high-speed network connecting California's public schools.) As part of the PORTS program, teachers are provided with fully developed units of study that furnish support, structure, preparation, and follow-up for these live presentations.

County and local school districts are an integral part of PORTS. County Offices of Education "connect" the parks and schools into the HSN. Individual school districts provide personnel to collaborate with park staff in developing curriculum for each location. County Offices of Education and individual school Districts throughout the state provide participating classrooms with video conferencing equipment, and configure their networks and Video Conference gatekeepers to provide quality-of-service for IP-based videoconference programs. State Parks provides the personnel and supplemental resources for presentations. The parks, county offices of education, and the individual districts also collaborate in constructing the "on-demand" material for teachers and students to use prior to the videoconference.

In addition, the development of the PORTS program has been supported by many other entities and organizations. Faculty and students at California State University, Monterey Bay, designed and built the green screen/chroma key system used at several different park locations. CSU Monterey Bay has also spearheaded the development of the ROVing Otter remotely operated vehicle in use at Point Lobos. The California State Parks Foundation and a number other cooperating associations

have also provided generous support to the PORTS program. These non-profit charitable organizations are dedicated to enhancing the educational and interpretive programs in California State Parks.

Innovative communications technologies abound in the PORTS program. A live, wireless webcam in the middle of a gregarious colony of elephant seals on Año Nuevo Island (See: http://www.parks.ca.gov/?page_id=523) is streamed on the internet and is used in combination with a green screen and a chromakey system to interpret the activities of these amazing animals to school children around the state.

Anza-Borrego State Park is home to the world class Stout Research Center Paleontology Lab where Paleontologists study the fossilized remains of extinct animals like mammoths and saber-toothed cats. (See: http://www.ports.parks.ca.gov/?page_id=23811.) A green screen and chromakey system in the lab allow students to try out their paleontology skills and can ask questions about fossils and Paleontology. In addition, a new portable video-conference unit and satellite fly-away system will allow students throughout the state to interact with researchers working in remote locations within the park.

A wireless mesh network at Crystal Cove State Beach (See: http://www.parks.ca.gov/default.asp?page_id=644) allows park rangers to videoconference from the park's tide pools and even with divers while underwater. In addition, the mesh network allows also students to interact with plein air artists while they paint on top of Crystal Cove's scenic bluffs.

At Point Lobos State Reserve, Wi-Fi technology and a private DSL system allow students to operate an undersea vehicle tethered to a kayak in Whaler's Cove. The "ROVing Otter" (See: <http://science.csumb.edu/ro/>) is a web-controlled, undersea, remotely operated vehicle (ROV) with an IP-based video camera on board that students can control from their classrooms to explore kelp forests and other undersea habitats.

B. Significance to the improvement of the operation of government

PORTS allows park rangers and interpreters to look directly into the eyes of children and engage them in conversation as the students sit in their classrooms and study science, history, language arts and other academic content standards. It allows students in urban areas and other locales to experience the grandness of their state parks. This program also provides students with access to park experts regardless of their geographic location or economic status.

Students in an urban Los Angeles classroom are able to talk directly to rangers on the slopes of the Sierra Nevada, tour the State Capitol, or follow a lifeguard as he/she explores the underwater world off our coast. In addition, park resources can be made available that are not typically accessible to park visitors. For example, children in our most populated regions can observe and study delicate wildflowers that are only found miles from the nearest paved road. They can view Native American rock art located in the most remote areas of the state. Warehouses full of cultural treasures can be utilized by classes that otherwise would never even know that such bounty existed.

However, the California State Park PORTS program is only able to further the mission of the state parks and improve the education of California school children through the implementation of many new communications technologies. It has only been through the use of innovative communications technologies (IP-based video conferencing, IP Quality-of-Service, IP-Underwater, streaming media, green screen/chromakey systems, 900 Mhz wireless, Wi-Fi, private DSL, wireless Mesh Networks, and fly-away satellite units) that State Parks can provide its amazing content to a very diverse audience that would not otherwise be able to receive it.

An ancillary benefit of the PORTS program is that video-conferencing equipment that is used to provide programming to school children can also be used to improve communications between park employees while substantially reducing employee travel costs!

C. Benefits realized by service recipients, taxpayers, agency or state

For many reasons, students today due to their physical and cultural environments are unaware of the values and importance of the California State Park System. The PORTS program allows economically disadvantaged children to experience parks hundreds of miles from their homes in areas rarely visited by their families. The inspiring backdrops of our state parks buttress their lessons of history, visual and performing arts, science, math, and English. This integrated program truly helps State Parks to achieve its mission to educate and inspire even when our school children cannot visit one of our parks directly.

The PORTS program strives not only to close the distance between today's urban youth and their natural and cultural heritage, but also to close the technological divide that separates their schools from the world beyond their walls. To accomplish these goals, the program draws upon the combined strengths of schools and parks to create units of study that directly address various academic content standards and park themes.

From a pedagogic standpoint, the benefits from the PORTS program are numerous. PORTS programs enhance existing curriculum and provides students with direct access to the knowledge, expertise, and enthusiasm of State Park employees who are exceptionally practiced in working with kids of all age groups. This is especially valuable for students who live far away from the remote park. The PORTS program also offers teachers and students a pleasant break from normal classroom routine, and thereby creates an important new opportunity for students to become excited and challenged within their normal course of study. Finally, there are many anecdotal stories nationwide of how a compelling video-conferencing field trip experience can still achieve many of the same life-changing benefits that result from the same kind of experience during a physical field trip.

D. Realized return on investment, short term/long term payback (include summary calculations)

During the 2005/2006 school year, the PORTS program in its first major year of operation has served approximately fifteen thousand students (15,000) in five hundred (500) classrooms throughout the state. A typical one-day field trip can cost between \$500 and \$1000, and can actually end up costing much more if students must fly to or stay overnight at the field trip location. If the main purpose of the PORTS project was only to save money, schools who participated in the program in the currently year would have saved between \$¼ million and \$1/2 million dollars in field trip expenses. Of course, the main purpose of the PORTS program is not to reduce or eliminate field trips but to provide an equivalent field trip alternative to those schools and classrooms that simply do not have the opportunity otherwise to visit a state park. For them, the \$500-\$1000 figure only serves to establish a lower boundary to the value of the PORTS program. The upper limit to the value of a PORTS experience may be priceless!

The California State Parks PORTS program is still very much in its infancy. School Districts and individual schools are only now implementing the configuration of quality-of-service (QOS) on their “last mile” network connections in order to enable the schools to participate in latency sensitive video conferencing programs. (It is amazing to see how quickly a computer lab filled with students can bring down a videoconference when QOS is not enabled!) In addition, it is only within the last year that videoconference units suitable for classroom use have become available at a price point of \$1500 or less. With the cost of video-conferencing technology achieving this new price point, the number of classrooms that will be able to participate in the program should skyrocket.

Ultimately, the return on investment of the PORTS program in the long term will be enormous. Based upon public school data for the 2003-2004 school year, there are over six million students in California who attend 9,223 public schools in the state. However, in the 2000-2001 fiscal year, California State Parks served 20,000 school groups. Since we have over 286,000 classrooms in the state, there are clearly many additional school classrooms in California that we are not currently serving with physical field trips. The overall number of classrooms in the state, however, certainly establishes the upward growth potential for the PORTS program. It is indeed enormous!